Claims

1. Arrangement for monitoring a measuring device (1) disposed in a wheeled vehicle (20), comprising

- the measuring device (1), said measuring device (1) being designed to measure three linear accelerations of the wheeled vehicle (20) which are oriented perpendicular to one another and three rotation rates of a rotational movement or of a component of a rotational movement about an axis of the wheeled vehicle (20), the three axes running perpendicular to one another,
- an orientation determining device (7) designed to determine an orientation of the wheeled vehicle (20) from the three rotation rates in a coordinate system external to the vehicle, and
- a monitoring device (9) designed to monitor at least one of the measured linear accelerations using an output variable of the orientation determining device (7) and using a comparison variable.

2. Arrangement according to claim 1, comprising a traveling velocity determining device (11) for determining a traveling velocity of the wheeled vehicle (20) and which is connected to the monitoring device (9), said monitoring device (9) being designed to determine a comparison variable using the traveling velocity.

3. Arrangement according to claim 2, wherein the traveling velocity determining device (11) is designed to determine the traveling velocity using a variable characterizing a rotation speed of a wheel of the wheeled vehicle (20).

4. Arrangement according to claim 2 or 3, wherein the traveling velocity determining device (11) is connected to a steering angle determining device (15) for determining a steeling angle of at least one steerable wheel (21, 22) of the wheeled vehicle (20) and wherein the traveling velocity determining device (11) is designed to determine the traveling velocity using the steering angle.

5. Arrangement according to one of claims 2 to 4, wherein the traveling velocity determining device (11) is connected to the measuring device (1) and is designed to determine the traveling velocity using at least one of the three rotation rates.

6. Arrangement according to one of claims 1 to 5, wherein the measuring device (1) has acceleration sensors (31, 32, 33) for measuring the three linear accelerations and rotation rate sensors (41, 42, 43) for measuring the three rotation rates and wherein the acceleration sensors (31, 32, 33) and the rotation rate sensors are parts of a prefabricated constructional unit (1) designed for mounting in the wheeled vehicle (20).

7. Arrangement according to one of claims 1 to 6, wherein the measuring device (1) is designed such that the three linear accelerations can be measured as three measured variables linearly independent of one another.

8. Arrangement according to one of claims 1 to 7, wherein the measuring device (1) is designed such that the three axes run pairwise perpendicular to one another.

9. Arrangement according to one of claims 1 to 8, wherein the monitoring device (9) is designed to perform monitoring using the orientation and using a comparison acceleration, and is designed to determine the comparison acceleration without using the to-be-monitored linear acceleration measured by the measuring device (1).

10. Arrangement according to one of claims 1 to 9, wherein the monitoring device (9) is designed to determine the comparison variable using a position of a vehicle body (25) on which the measuring device (1) is mounted or is to be mounted, relative to a chassis (21, 22, 23, 24).

11. Arrangement according to one of claims 1 to 10, wherein the orientation determining device (7) is designed to detect a stationary state of the wheeled vehicle (20) and, in said stationary state, to determine the values for a specifically future determination of the orientation using at least one of the linear accelerations measured by the measuring device (1).

12. Arrangement according to one of claims 1 to 11, wherein the orientation determining device (7) is designed to detect straight-ahead travel of the wheeled vehicle (20) on a level surface and, in this driving situation, to determine values for a specifically future determination of the orientation using at least one of the linear accelerations measured by the measuring device (1).

13. Method for monitoring a measuring device (1) disposed in a wheeled vehicle (20) wherein the measuring device (1) is designed to measure three linear accelerations of the wheeled vehicle (20) which are oriented perpendicular to one another and three rotation rates of a rotational movement or of a component of a rotational movement about an axis of the wheeled vehicle (20), the three axes running perpendicular to one another and wherein

- at least components of an orientation of the wheeled vehicle (20) in a coordinate system external to the vehicle are determined from the three rotation rates and
- monitoring of at least one of the measured linear accelerations is performed using at least the components of the orientation and using a comparison variable.

14. Method according to claim 13, wherein a traveling velocity of the wheeled vehicle (20) is determined and wherein the comparison variable is determined allowing for the traveling velocity.

15. Method according to claim 14, wherein the traveling velocity is determined using a variable characterizing a rotation speed of a wheel of the wheeled vehicle (20).

16. Method according to claim 14 or 15, wherein the traveling velocity is determined using a steering angle of at least one steerable wheel (21, 22) of the wheeled vehicle (20).

17. Method according to one of claims 14 to 16, wherein the traveling velocity is determined using at least one of the three rotation rates measured by the measuring device.

18. Method according to one of claims 13 to 17, wherein the three linear accelerations are measured as three measured variables linearly independent of one another.

19. Method according to one of claims 13 to 18, wherein the three rotation rates are each measured as rotation rates about one of three axes running pairwise perpendicular to one another.

20. Method according to one of claims 13 to 19, wherein at least one of the components of the orientation and a comparison acceleration are used for monitoring and wherein the comparison acceleration is determined without using the linear acceleration to be monitored.

21. Method according to one of claims 13 to 20, wherein the comparison variable is determined using a position of a vehicle body (25) on which the measuring device (1) is mounted or is to be mounted, relative to a chassis (21, 22, 23, 24,).

22. Method according to one of claims 13 to 21, wherein to determine the orientation, a stationary state of the wheeled vehicle (20) is detected and, during said stationary state, values for a specifically future determination of the orientation are determined using at least one of the measured linear accelerations.

23. Method according to one of claims 13 to 22, wherein to determine the orientation, straight-ahead travel of the wheeled vehicle (20) on a level surface is detected and, in this driving situation, values for a specifically future determination of the orientation are determined using at least one of the measured linear accelerations.